

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Grotendorst, Gary R.
Bradham Jr., Douglas M.,

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(ii) TITLE OF INVENTION: CONNECTIVE TISSUE GROWTH FACTOR

(iii) NUMBER OF SEQUENCES: 2

(iv) CORRESPONDENCE ADDRESS:

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(A) ADDRESSEE: Spensley Horn Jubas & Lubitz
(B) STREET: 4225 Executive Square, Suite 1400
(C) CITY: La Jolla
(D) STATE: CA
(E) COUNTRY: US
(F) ZIP: 92037

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(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.25

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(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: US
(B) FILING DATE: 30-AUG-1991
(C) CLASSIFICATION:

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(vii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Wetherell, Jr. Ph.D., John W.
(B) REGISTRATION NUMBER: 31,678
(C) REFERENCE/DOCKET NUMBER: PD-1294

(ix) TELECOMMUNICATION INFORMATION:

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(A) TELEPHONE: 619-455-5100
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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2075 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(vii) IMMEDIATE SOURCE:

- (B) CLONE: DB60R32

(ix) FEATURE:

- (A) NAME/KEY: CDS
 (B) LOCATION: 130..1177

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

| | | |
|----|---|-----|
| | CCCGGCCGAC AGCCCCGAGA CGACAGCCCG GCGCGTCCCG GTCCCCACCT CCGACCACCG | 60 |
| 15 | CCAGCGCTCC AGGCCCGCGG CTCCCCGCTC GCGGCCACCG CGCCCTCCGC TCGCCCCGCA | 120 |
| | GTGCCAACC ATG ACC GCC GCC AGT ATG GGC CCC GTC CGC GTC GCC TTC | 168 |
| | Met Thr Ala Ala Ser Met Gly Pro Val Arg Val Ala Phe | |
| | 1 5 10 | |
| 20 | GTG GTC CTC CTC GCC CTC TGC AGC CCG CCG GCC GTC GGC CAG AAC TGC | 216 |
| | Val Val Leu Leu Ala Leu Cys Ser Arg Pro Ala Val Gly Gln Asn Cys | |
| | 15 20 25 | |
| | AGC GGG CCG TGC CCG TGC CCG GAC GAG CCG GCG CCG CGC TGC CCG GCG | 264 |
| | Ser Gly Pro Cys Arg Cys Pro Asp Glu Pro Ala Pro Arg Cys Pro Ala | |
| | 30 35 40 45 | |
| 25 | GGC GTG AGC CTC GTG CTG GAC GGC TGC GGC TGC TGC CGC GTC TGC GCC | 312 |
| | Gly Val Ser Leu Val Leu Asp Gly Cys Gly Cys Cys Arg Val Cys Ala | |
| | 50 55 60 | |
| 30 | AAG CAG CTG GGC GAG CTG TGC ACC GAG CGC GAC CCC TGC GAC CCG CAC | 360 |
| | Lys Gln Leu Gly Glu Leu Cys Thr Glu Arg Asp Pro Cys Asp Pro His | |
| | 65 70 75 | |

| | | | | | | | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | AAG | GGC | CTC | TTC | TGT | GAC | TTC | GGC | TCC | CCG | GCC | AAC | CGC | AAG | ATC | GGC | 408 |
| | | Lys | Gly | Leu | Phe | Cys | Asp | Phe | Gly | Ser | Pro | Ala | Asn | Arg | Lys | Ile | Gly | |
| | | | | 80 | | | | | 85 | | | | | 90 | | | | |
| 5 | | GTG | TGC | ACC | GCC | AAA | GAT | GGT | GCT | CCC | TGC | ATC | TTC | GGT | GGT | ACG | GTG | 456 |
| | | Val | Cys | Thr | Ala | Lys | Asp | Gly | Ala | Pro | Cys | Ile | Phe | Gly | Gly | Thr | Val | |
| | | | 95 | | | | | 100 | | | | | 105 | | | | | |
| | | TAC | CGC | AGC | GGA | GAG | TCC | TTC | CAG | AGC | AGC | TGC | AAG | TAC | CAG | TGC | ACG | 504 |
| | | Tyr | Arg | Ser | Gly | Glu | Ser | Phe | Gln | Ser | Ser | Cys | Lys | Tyr | Gln | Cys | Thr | |
| | | 110 | | | | | 115 | | | | | 120 | | | | | 125 | |
| 10 | | TGC | CTG | GAC | GGG | GCG | GTG | GGC | TGC | ATG | CCC | CTG | TGC | AGC | ATG | GAC | GTT | 552 |
| | | Cys | Leu | Asp | Gly | Ala | Val | Gly | Cys | Met | Pro | Leu | Cys | Ser | Met | Asp | Val | |
| | | | | | | 130 | | | | | 135 | | | | | 140 | | |
| | | CGT | CTG | CCC | AGC | CCT | GAC | TGC | CCC | TTC | CCG | AGG | AGG | GTC | AAG | CTG | CCC | 600 |
| 15 | | Arg | Leu | Pro | Ser | Pro | Asp | Cys | Pro | Phe | Pro | Arg | Arg | Val | Lys | Leu | Pro | |
| | | | | | 145 | | | | | 150 | | | | | 155 | | | |
| | | GGG | AAA | TGC | TGC | GAG | GAG | TGG | GTG | TGT | GAC | GAG | CCC | AAG | GAC | CAA | ACC | 648 |
| | | Gly | Lys | Cys | Cys | Glu | Glu | Trp | Val | Cys | Asp | Glu | Pro | Lys | Asp | Gln | Thr | |
| | | | | 160 | | | | 165 | | | | | | 170 | | | | |
| 20 | | GTG | GTT | GGG | CCT | GCC | CTC | GCG | GCT | TAC | CGA | CTG | GAA | GAC | ACG | TTT | GGC | 696 |
| | | Val | Val | Gly | Pro | Ala | Leu | Ala | Ala | Tyr | Arg | Leu | Glu | Asp | Thr | Phe | Gly | |
| | | | 175 | | | | | 180 | | | | | 185 | | | | | |
| | | CCA | GAC | CCA | ACT | ATG | ATT | AGA | GCC | AAC | TGC | CTG | GTC | CAG | ACC | ACA | GAG | 744 |
| | | Pro | Asp | Pro | Thr | Met | Ile | Arg | Ala | Asn | Cys | Leu | Val | Gln | Thr | Thr | Glu | |
| | | 190 | | | | 195 | | | | | | 200 | | | | | 205 | |
| 25 | | TGG | AGC | GCC | TGT | TCC | AAG | ACC | TGT | GGG | ATG | GGC | ATC | TCC | ACC | CGG | GTT | 792 |
| | | Trp | Ser | Ala | Cys | Ser | Lys | Thr | Cys | Gly | Met | Gly | Ile | Ser | Thr | Arg | Val | |
| | | | | | | 210 | | | | 215 | | | | | | 220 | | |
| | | ACC | AAT | GAC | AAC | GCC | TCC | TGC | AGG | CTA | GAG | AAG | CAG | AGC | CGC | CTG | TGC | 840 |
| 30 | | Thr | Asn | Asp | Asn | Ala | Ser | Cys | Arg | Leu | Glu | Lys | Gln | Ser | Arg | Leu | Cys | |
| | | | | | 225 | | | | | 230 | | | | | 235 | | | |
| | | ATG | GTC | AGG | CCT | TGC | GAA | GCT | GAC | CTG | GAA | GAG | AAC | ATT | AAG | AAG | GGC | 888 |
| | | Met | Val | Arg | Pro | Cys | Glu | Ala | Asp | Leu | Glu | Glu | Asn | Ile | Lys | Lys | Gly | |
| | | | | 240 | | | | 245 | | | | | | 250 | | | | |

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|----|--|------|
| | AAA AAG TGC ATC CGT ACT CCC AAA ATC TCC AAG CCT ATC AAG TTT GAG | 936 |
| | Lys Lys Cys Ile Arg Thr Pro Lys Ile Ser Lys Pro Ile Lys Phe Glu | |
| | 255 260 265 | |
| 5 | CTT TCT GGC TGC ACC AGC ATG AAG ACA TAC CGA GCT AAA TTC TGT GGA | 984 |
| | Leu Ser Gly Cys Thr Ser Met Lys Thr Tyr Arg Ala Lys Phe Cys Gly | |
| | 270 275 280 285 | |
| | GTA TGT ACC GAC GGC CGA TGC TGC ACC CCC CAC AGA ACC ACC ACC CTG | 1032 |
| | Val Cys Thr Asp Gly Arg Cys Cys Thr Pro His Arg Thr Thr Thr Leu | |
| | 290 295 300 | |
| 10 | CCG GTG GAG TTC AAG TGC CCT GAC GGC GAG GTC ATG AAG AAG AAC ATG | 1080 |
| | Pro Val Glu Phe Lys Cys Pro Asp Gly Glu Val Met Lys Lys Asn Met | |
| | 305 310 315 | |
| | ATG TTC ATC AAG ACC TGT GCC TGC CAT TAC AAC TGT CCC GGA GAC AAT | 1128 |
| 15 | Met Phe Ile Lys Thr Cys Ala Cys His Tyr Asn Cys Pro Gly Asp Asn | |
| | 320 325 330 | |
| | GAC ATC TTT GAA TCG CTG TAC TAC AGG AAG ATG TAC GGA GAC ATG GCA T | 1177 |
| | Asp Ile Phe Glu Ser Leu Tyr Tyr Arg Lys Met Tyr Gly Asp Met Ala | |
| | 335 340 345 | |
| | GAAGCCAGAG AGTGAGAGAC ATTAACATCAT TAGACTGGAA CTTGAACTGA TTCACATCTC | 1237 |
| 20 | ATTTTCCGT AAAAATGATT TCAGTAGCAC AAGTTATTIA AATCTGTTTT TCTAACTGGG | 1297 |
| | GGAAAAGATT CCCACCCAAT TCAAAACATT GTGCCATGTC AAACAAATAG TCTATCTTCC | 1357 |
| | CCAGACACTG GTTTGAAGAA TGTTAAGACT TGACAGTGGA ACTACATTAG TACACAGCAC | 1417 |
| | CAGAATGTAT ATTAAGGTGT GGCTTTAGGA GCAGTGGGAG GGTACCGGCC CGGTTAGTAT | 1477 |
| | CATCAGATCG ACTCTTATAC GAGTAATATG CCTGCTATTT GAAGTGTAAT TGAGAAGGAA | 1537 |
| 25 | AATTTTAGCG TGCTCACTGA CCTGCCTGTA GCCCCAGTGA CAGCTAGGAT GTGCATTCTC | 1597 |
| | CAGCCATCAA GAGACTGAGT CAAGTTGTTC CTTAAGTCAG AACAGCAGAC TCAGCTCTGA | 1657 |
| | CATTCTGATT CGAATGACAC TGTTCAAGAA TCGGAATCCT GTCGATTAGA CTGGACAGCT | 1717 |
| | TGTGGCAAGT GAATTTGCCT GTAACAAGCC AGATTTTTTA AAATTTATAT TGTAATATT | 1777 |
| | GTGTGTGTGT GTGTGTGTGT ATATATATAT ATATATGTAC AGTTATCTAA GTTAATTTAA | 1837 |

AGTTGTTTGT GCCTTTTAT TTTTGTTTTT AATGCTTTGA TATTICAATG TTAGCCTCAA 1897
 TTTCTGAACA CCATAGGTAG AATGTAAAGC TTGTCTGATC GTTCAAAGCA TGAAATGGAT 1957
 ACTTATATGG AAATTCTGCT CAGATAGAAT GACAGTCCGT CAAAACAGAT TGTTTGCAAA 2017
 GGGGAGGCAT CAGTGTCTTG GCAGGCTGAT TTCTAGGTAG GAAATGTGGT AGCTCACG 2075

5 (2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 349 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

10 (ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met Thr Ala Ala Ser Met Gly Pro Val Arg Val Ala Phe Val Val Leu
 1 5 10 15
 Leu Ala Leu Cys Ser Arg Pro Ala Val Gly Gln Asn Cys Ser Gly Pro
 20 25 30
 Cys Arg Cys Pro Asp Glu Pro Ala Pro Arg Cys Pro Ala Gly Val Ser
 35 40 45
 Leu Val Leu Asp Gly Cys Gly Cys Cys Arg Val Cys Ala Lys Gln Leu
 50 55 60
 Gly Glu Leu Cys Thr Glu Arg Asp Pro Cys Asp Pro His Lys Gly Leu
 65 70 75 80
 Phe Cys Asp Phe Gly Ser Pro Ala Asn Arg Lys Ile Gly Val Cys Thr
 85 90 95
 Ala Lys Asp Gly Ala Pro Cys Ile Phe Gly Gly Thr Val Tyr Arg Ser
 100 105 110
 Gly Glu Ser Phe Gln Ser Ser Cys Lys Tyr Gln Cys Thr Cys Leu Asp
 115 120 125

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|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Gly | Ala | Val | Gly | Cys | Met | Pro | Leu | Cys | Ser | Met | Asp | Val | Arg | Leu | Pro | |
| | 130 | | | | | | 135 | | | | | 140 | | | | | |
| | Ser | Pro | Asp | Cys | Pro | Phe | Pro | Arg | Arg | Val | Lys | Leu | Pro | Gly | Lys | Cys | |
| | 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| 5 | Cys | Glu | Glu | Trp | Val | Cys | Asp | Glu | Pro | Lys | Asp | Gln | Thr | Val | Val | Gly | |
| | | | | | 165 | | | | | 170 | | | | | 175 | | |
| | Pro | Ala | Leu | Ala | Ala | Tyr | Arg | Leu | Glu | Asp | Thr | Phe | Gly | Pro | Asp | Pro | |
| | | | | 180 | | | | | 185 | | | | | 190 | | | |
| 10 | Thr | Met | Ile | Arg | Ala | Asn | Cys | Leu | Val | Gln | Thr | Thr | Glu | Trp | Ser | Ala | |
| | | | 195 | | | | | 200 | | | | | 205 | | | | |
| | Cys | Ser | Lys | Thr | Cys | Gly | Met | Gly | Ile | Ser | Thr | Arg | Val | Thr | Asn | Asp | |
| | 210 | | | | | | 215 | | | | | 220 | | | | | |
| | Asn | Ala | Ser | Cys | Arg | Leu | Glu | Lys | Gln | Ser | Arg | Leu | Cys | Met | Val | Arg | |
| | 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| 15 | Pro | Cys | Glu | Ala | Asp | Leu | Glu | Glu | Asn | Ile | Lys | Lys | Gly | Lys | Lys | Cys | |
| | | | | | 245 | | | | | 250 | | | | | 255 | | |
| | Ile | Arg | Thr | Pro | Lys | Ile | Ser | Lys | Pro | Ile | Lys | Phe | Glu | Leu | Ser | Gly | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| 20 | Cys | Thr | Ser | Met | Lys | Thr | Tyr | Arg | Ala | Lys | Phe | Cys | Gly | Val | Cys | Thr | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| | Asp | Gly | Arg | Cys | Cys | Thr | Pro | His | Arg | Thr | Thr | Thr | Leu | Pro | Val | Glu | |
| | 290 | | | | | | 295 | | | | | 300 | | | | | |
| | Phe | Lys | Cys | Pro | Asp | Gly | Glu | Val | Met | Lys | Lys | Asn | Met | Met | Phe | Ile | |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| 25 | Lys | Thr | Cys | Ala | Cys | His | Tyr | Asn | Cys | Pro | Gly | Asp | Asn | Asp | Ile | Phe | |
| | | | | | 325 | | | | | 330 | | | | | 335 | | |
| | Glu | Ser | Leu | Tyr | Tyr | Arg | Lys | Met | Tyr | Gly | Asp | Met | Ala | | | | |
| | | | | 340 | | | | | 345 | | | | | | | | |